

Appendix B

Meteorological Data

This section contains meteorological data derived from various regulatory and non-regulatory sites. The data provides a comparative analysis of winds speed, wind direction, wind gusts and concentration data. Please note that meteorological instruments measure at different heights, and at different time intervals. By taking, the actual time of measurement and assuring that all data represented is in Pacific Standard Time (PST) there is uniformity of the data. In addition, not all stations measure at the exact same time, i.e. measurements at 0:53 and 0:56 therefore, comparisons are measurements within a 60-minute period. While there may be some overlapping and slight differences the comparative analysis provides the reader with a better understanding of the regional effect of the Exceptional Event.

FIGURE B-1
METEOROLOGICAL SITES WITHIN IMPERIAL, SAN DIEGO, RIVERSIDE, AND YUMA COUNTIES



Fig B-1: Is a graphical representation of the meteorological stations utilized for the Exceptional Event

IMPERIAL COUNTY SITES
Figures B-2 through B-8

FIGURE B-2
IMPERIAL COUNTY AIRPORT (KIPL)
WIND SPEED, GUSTS & DIRECTION

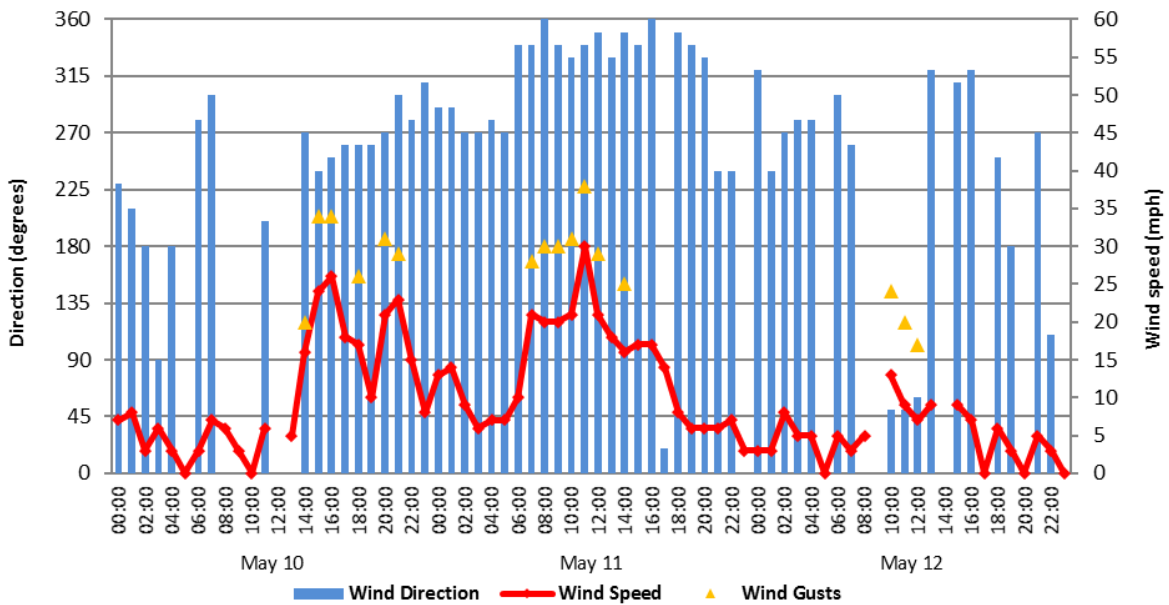


Fig B-2: Imperial Airport meteorological data for May 10, 2014 through May 12, 2014 shows how the wind speed shifted from westerly on May 10, 2014 to north-northwest and north on May 12, 2014. Both days had wind gusts over 30 mph. Wind data from the NCEI's QCLCD data

FIGURE B-3
NILAND WIND SPEED & DIRECTION

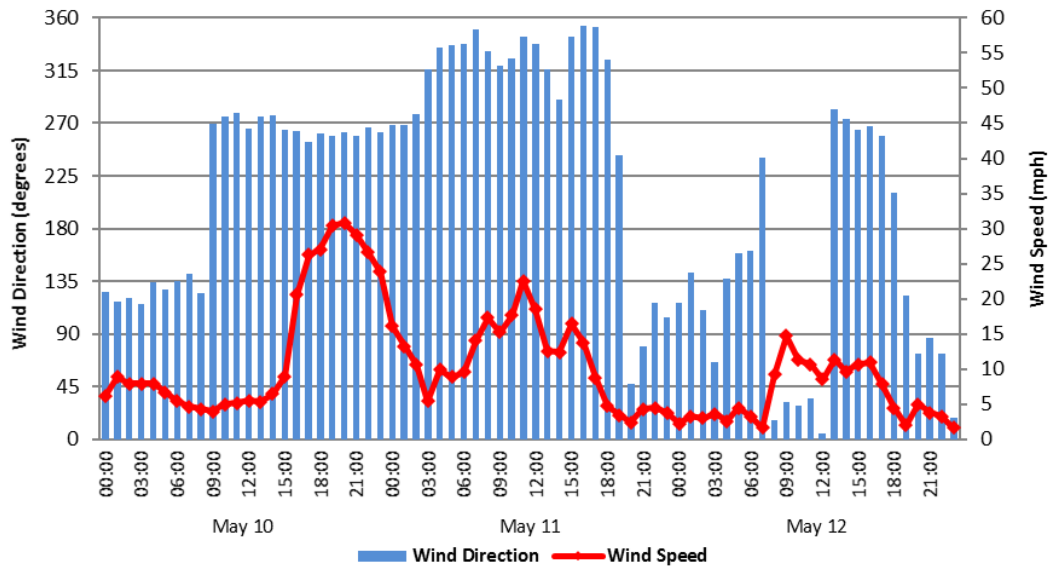


Fig B-3: Niland meteorological data shows a similar shift in wind direction as KIPL. Winds were over 25 mph for six hours on May 10, 2014. Wind data from the EPA's AQS data bank

FIGURE B-4
NILAND WIND ROSE

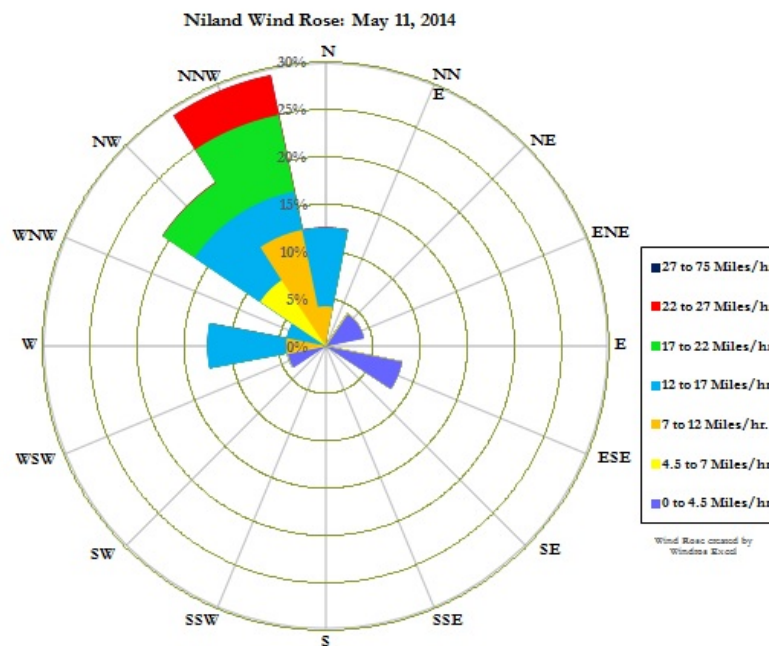


Fig B-4: Strong northwest winds on May 11, 2014 are confirmed by the wind rose at the Niland Station

FIGURE B-5
BOMBAY BEACH
WIND SPEED & DIRECTION

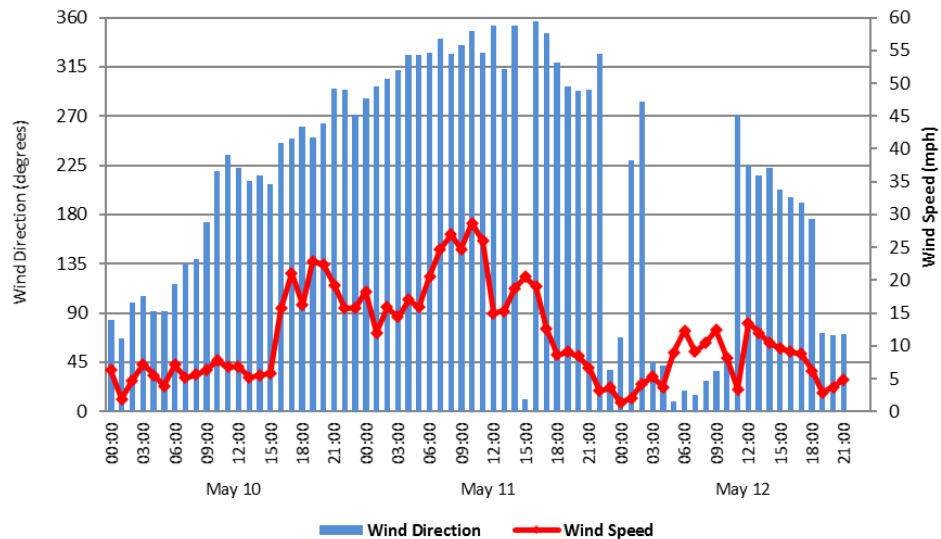


Fig B-5: Bombay Beach is located northwest of Niland. It served as a critical upstream site on May 11, 2014 when winds were northerly. Wind data from California ARB AQMIS2

FIGURE B-6
DOS PALMAS
WIND SPEED, GUSTS & DIRECTION

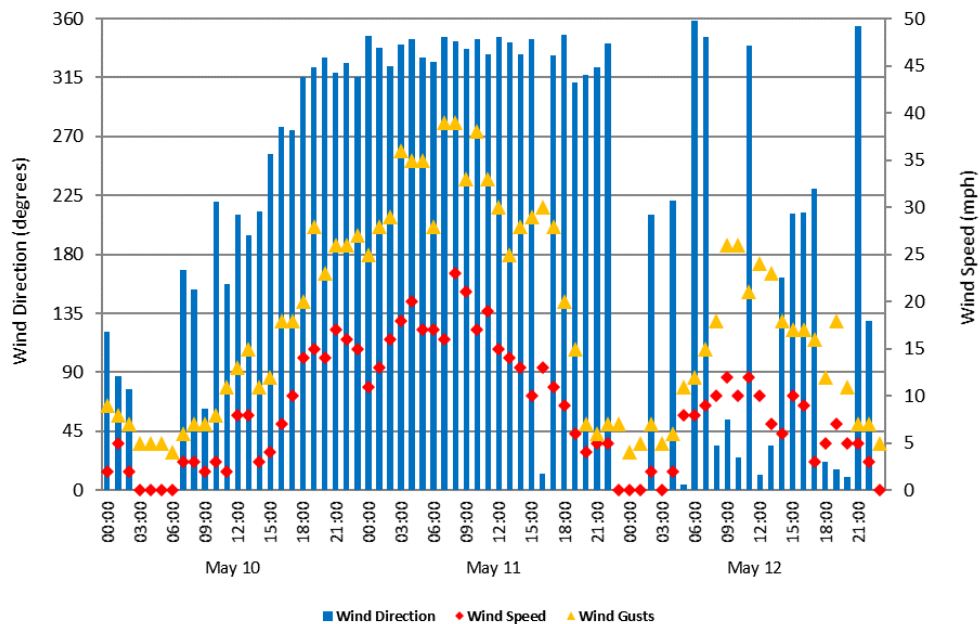


Fig B-6: Dos Palmas is located northwest of Niland. It served as a critical upstream site on May 11, 2014 when winds were northerly. Wind data from the University of Utah's MesoWest data bank; <http://mesowest.utah.edu/>, station ID DPMC1

FIGURE B-7
EI CENTRO NAF (KNJK)
WIND SPEED, GUSTS & DIRECTION

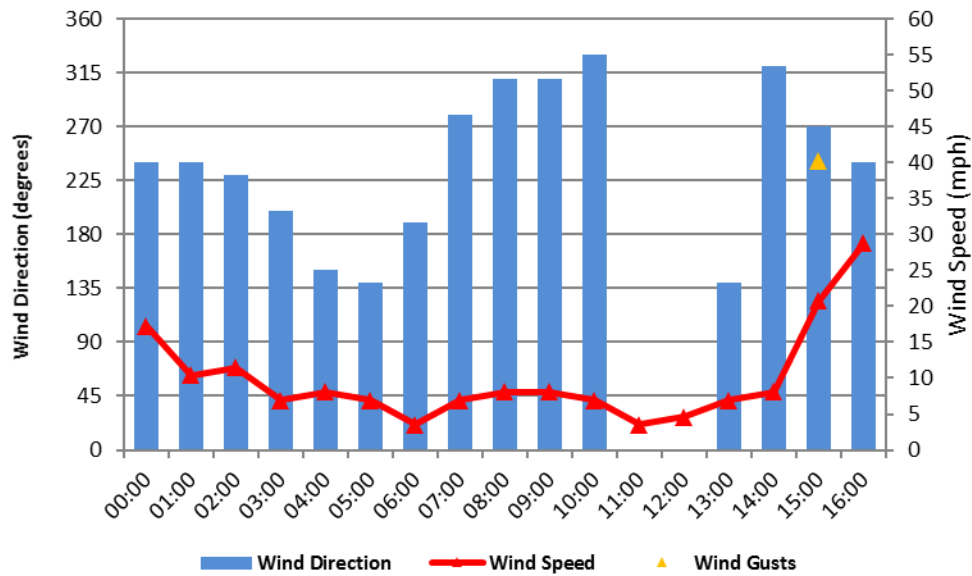


Fig B-7: El Centro NAF did not record for part of May 10, 2014, and all of May 11, 2014. Wind data from the NCEI's QCLCD data

FIGURE B-8
CALEXICO WIND SPEED & DIRECTION

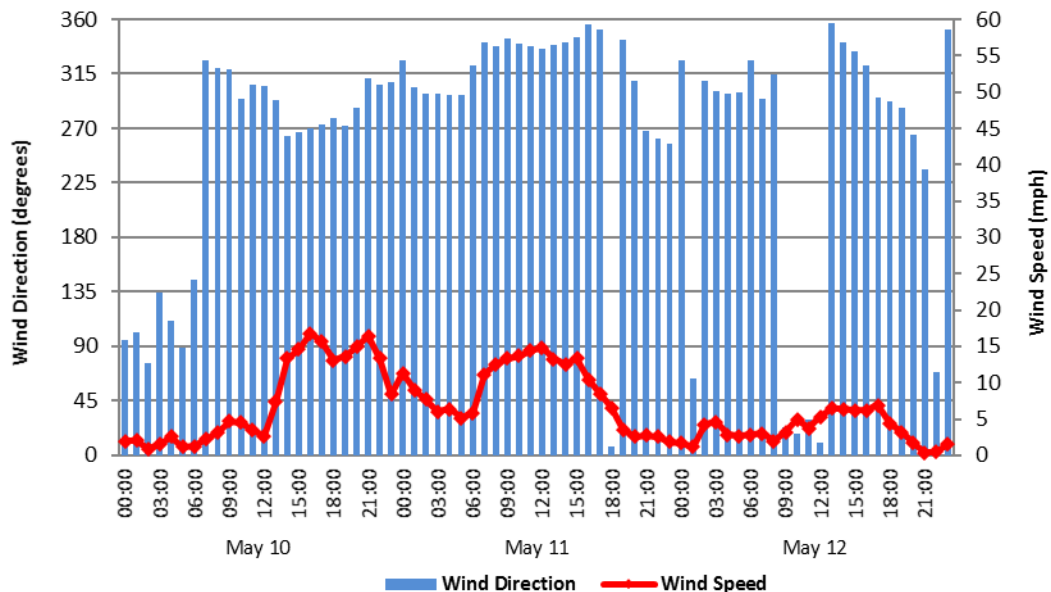


Fig B-8: Calexico in the southern part of the county recorded winds speeds lower than that of Niland on May 11, 2014. Wind data from the EPA's AQS data

RIVERSIDE COUNTY SITES

FIGURE B-9
PALM SPRINGS AIRPORT (KPSP)
WIND SPEED, GUSTS & DIRECTION

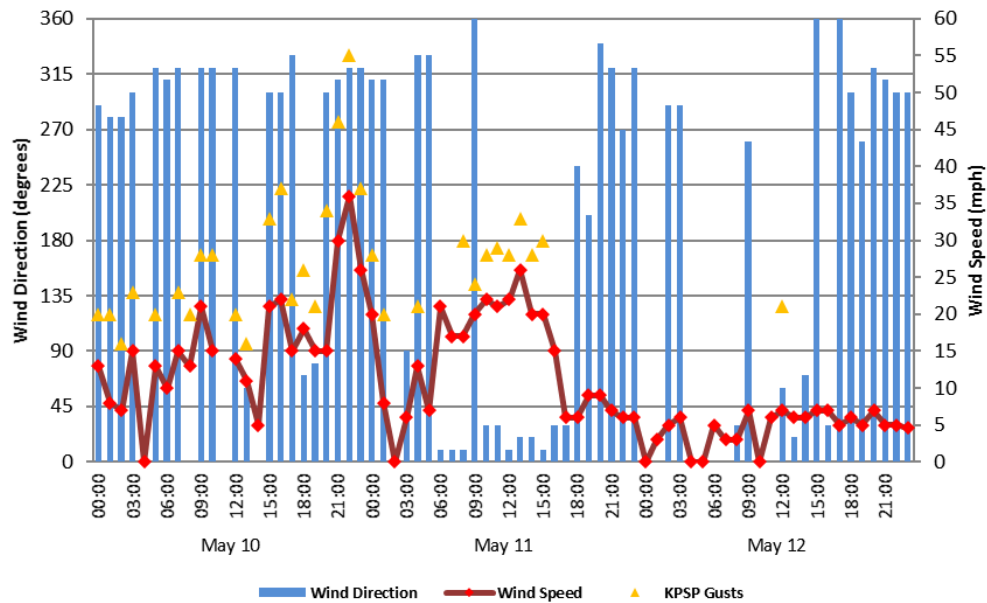


FIGURE B-10
JACQUELINE COCHRAN AIRPORT (KTRM)
WIND SPEED, GUSTS & DIRECTION

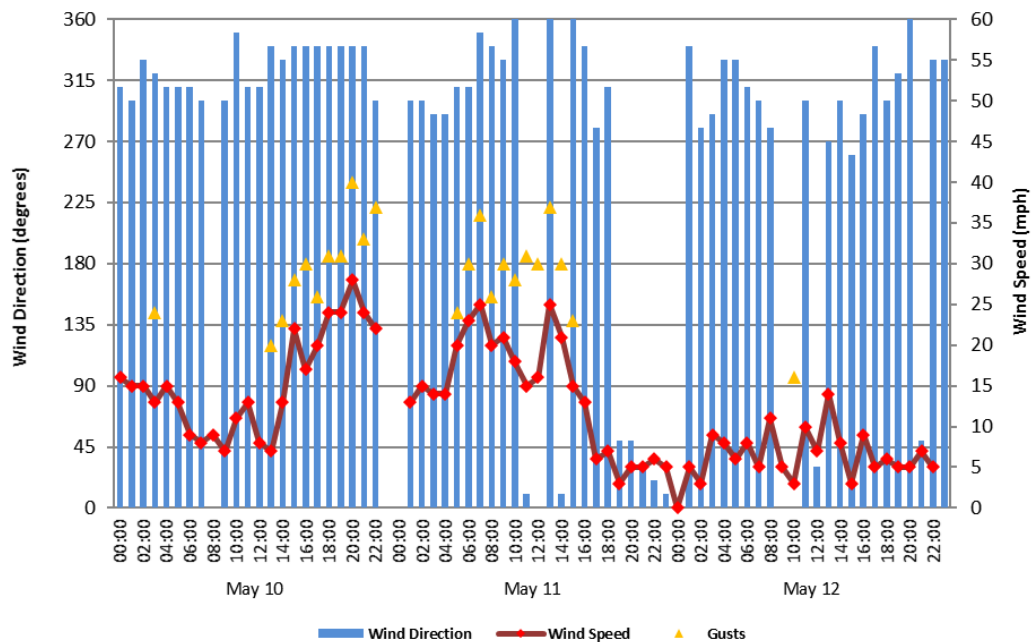


FIGURE B-11
BLYTHE AIRPORT (KBLH)
WIND SPEED, GUSTS & DIRECTION

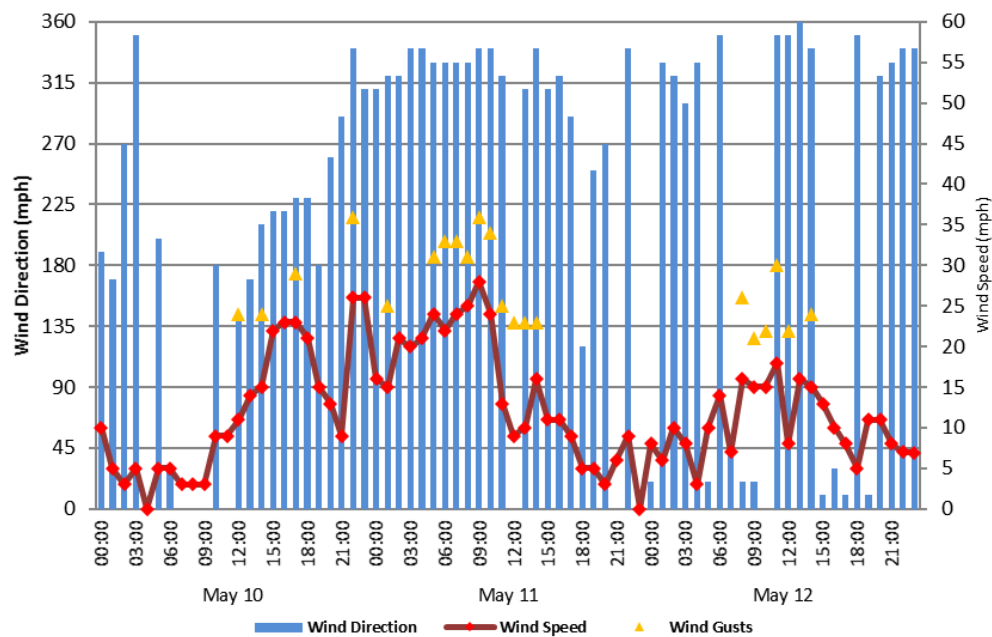


Fig B-9 through B-11: Palm Springs Airport (KPSP), Jacqueline Cochran Airport (KTRM), and Blythe Airport (KBLH) all showed an increase in wind speed accompanied by gusts over 35 mph. Wind data from the NCEI's QCLCD system

OTHER METEOROLOGICAL SITES

The following graphs provide evidence of the elevated wind speeds and wind direction at sites in southwestern Arizona, northeastern San Diego County, eastern San Bernardino County, and in Mexico. Note that times depicted in the graphs are for readings taken at any time within the hour given.

FIGURE B-12
YUMA, ARIZONA MCAS (KNYL)
WIND SPEED, GUSTS & DIRECTION

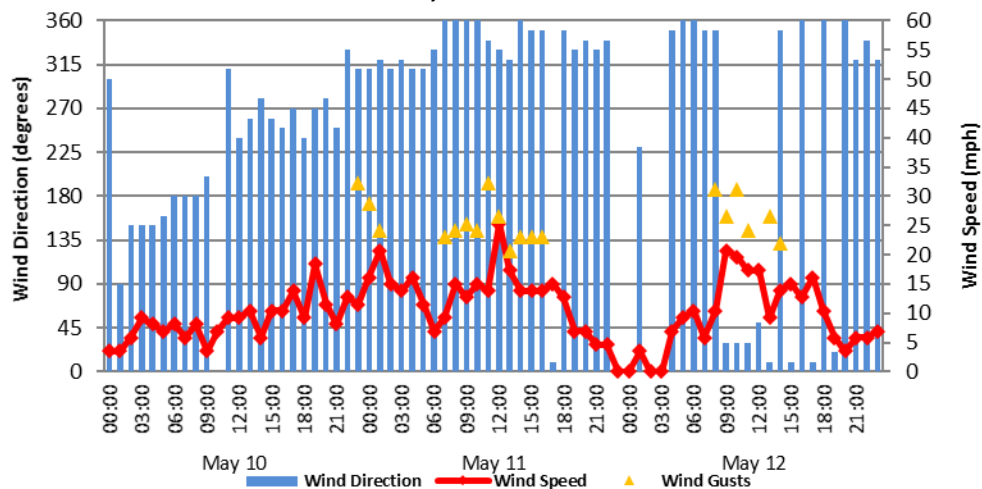


Fig B-12: Yuma MCAS saw winds increase out of the NW to N on May 11, 2014. Yuma is downstream and southeast of Niland. Data from the University of Utah's MesoWest

FIGURE B-13
MEXICALI, MEXICO AIRPORT (MMML)
WIND SPEED & DIRECTION

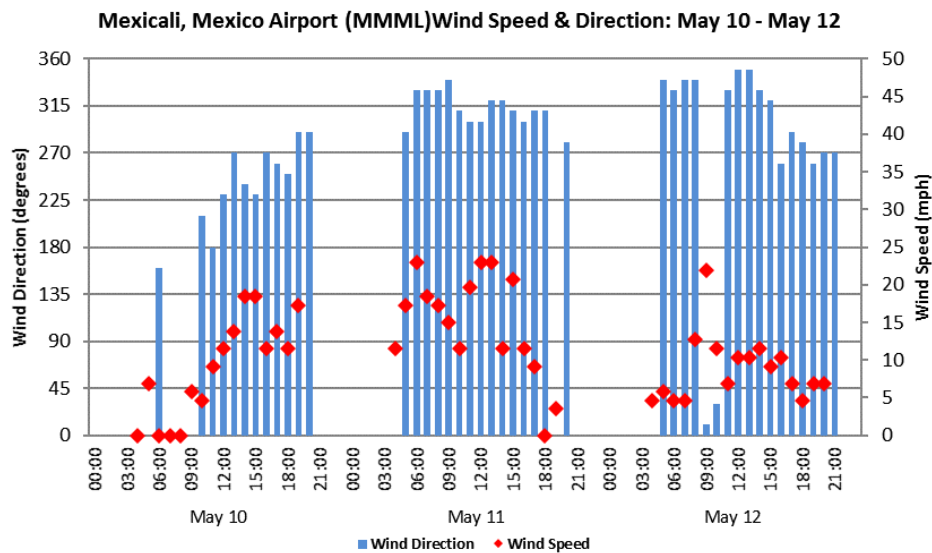


Fig B-13: Mexicali Airport showed a WNW to NW wind direction during the event. Mexicali is about 41 miles south of Niland. Data from the University of Utah's MesoWest

FIGURE B-14
BORREGO SPRINGS
WIND SPEED, GUSTS & DIRECTION

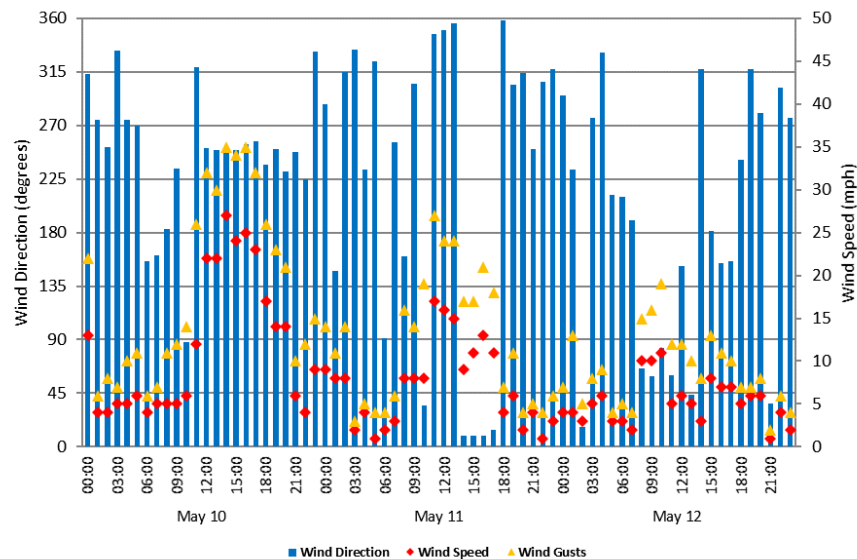


Fig B-14: Borrego Springs in northeastern San Diego County is almost directly west of Niland. It was upstream of the Niland monitor during May 10, 2014 when winds were gusting from the west. Data from the University of Utah's MesoWest data bank; <http://mesowest.utah.edu/>; station ID BRGSD

FIGURE B-15
TWENTYNINE PALMS AIRPORT (KNXP)
WIND SPEED, GUSTS & DIRECTION

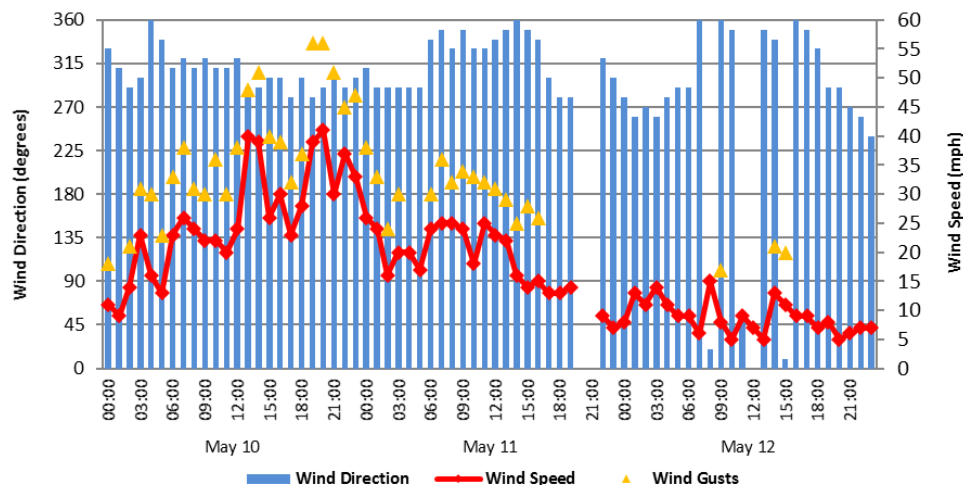


Fig B-15: Twentynine Palms Airport is in eastern San Bernardino County about 80 miles NNW of Niland. Northerly winds at the station on May 11, 2014 placed it upstream from the Niland monitor when winds were gusting from the N to NNW west. Data from the NCEI's QCLCD data bank

FIGURE B-16 **IMPERIAL COUNTY AIRPORT QCLCD MAY 10, 2014 & MAY 11, 2014**

QUALITY CONTROLLED Local Climatological Data: IMPERIAL COUNTY AIRPORT

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA (final) HOURLY OBSERVATIONS TABLE IMPERIAL COUNTY AIRPORT (03144) IMPERIAL, CA (05/2014)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: -58 ft. below sea level
Latitude: 32.834
Longitude: -115.578
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp (F)	Wet Bulb Temp (F)	Dew Point Temp (F)	Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Altitude (in. hg)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
10	0053	12	CLR	10.00		70	21.1	56	13.43	8.1	38	7	230			29.78	AA		29.70			
10	0153	12	CLR	10.00							5.6	38	8	210		29.83	29.77	AA		29.77		
10	0253	12	CLR	10.00		69	20.6	55	12.7	42	5.6	40	3	180		29.82	29.76	AA		29.76		
10	0353	12	CLR	10.00		67	19.4	54	12.2	42	8.9	56	6	090		29.82	29.76	AA		29.76		
10	0453	12	CLR	10.00		64	17.8	55	12.9	48	8.9	56	3	180		29.83	29.77	AA		29.77		
10	0553	12	CLR	10.00		64	17.8	55	12.9	48	8.9	56	0	000		29.84	29.78	AA		29.78		
10	0653	12	CLR	10.00		66	18.9	57	13.9	50	8.4	43	3	280		29.84	29.78	AA		29.78		
10	0753	12	CLR	10.00		73	22.8	60	15.2	49	7.2	30	7	300		29.84	29.78	AA		29.78		
10	0853	12	CLR	10.00		79	26.1	60	15.6	45	6.7	27	6	VR		29.82	29.77	AA		29.77		
10	0953	12	CLR	10.00		81	27.2	60	15.7	44	6.7	27	6	VR		29.81	29.75	AA		29.75		
10	1053	12	CLR	10.00		84	28.9	60	15.4	39	4.4	18	0	000		29.79	29.73	AA		29.73		
10	1153	12	CLR	10.00		88	31.1	62	16.4	40	4.4	18	6	200		29.75	29.69	AA		29.69		
10	1253	12	CLR	10.00		89	31.7	62	16.5	40	5.0	17		M		29.73	29.67	AA		29.67		
10	1353	12	CLR	10.00		91	32.8	63	17.1	41	3.9	15	5	VR		29.69	29.63	AA		29.63		
10	1453	12	CLR	10.00		93	33.9	63	17.1	39	2.8	13	16	270	20	29.66	29.60	AA		29.60		
10	1553	12	CLR	10.00		95	35.0	63	17.2	37	2.8	14	24	240	34	29.66	29.60	AA		29.60		
10	1653	12	CLR	10.00		92	33.3	62	16.6	37	2.2	16	26	250	34	29.66	29.59	AA		29.59		
10	1753	12	CLR	10.00		87	30.6	60	15.4	36	2.2	19	18	260		29.66	29.60	AA		29.60		
10	1853	12	CLR	10.00		82	27.8	58	14.3	36	3.9	26	17	260	26	29.67	29.61	AA		29.61		
10	1953	12	CLR	10.00		77	25.0	57	13.8	39	3.9	28	10	260		29.68	29.62	AA		29.62		
10	2053	12	CLR	9.00		74	23.3	56	13.2	39	1.7	24	21	270	31	29.68	29.62	AA		29.62		
10	2135	12	BKN011	2.00	HZ	74	23.3	54	12.4	35	4.4	31	21	300	25	29.71	M	SP		29.65		
10	2137	12	VV009	1.00	HZ	72	22.2	55	12.9	40	4.4	31	23	300	28	29.71	M	SP		29.65		
10	2144	12	VV008	0.75	HZ	73	22.2	55	12.9	39	4.4	31	23	300	29	29.71	M	SP		29.65		
10	2153	12	VV004	0.75	HZ	72	22.2	55	12.9	39	3.3	30	21	270	29	29.69	M	SP		29.63		
10	2212	12	VV004	1.00	HZ	71	21.7	54	12.3	38	3.3	30	20	260		29.69	M	SP		29.63		
10	2219	12	OV004	2.00	HZ	71	21.7	54	12.3	38	2.8	29	20	260		29.70	M	SP		29.64		
10	2234	12	SCT004	5.00	HZ	71	21.7	54	12.1	37	2.2	28	15	270	26	29.72	M	SP		29.66		
10	2244	12	FEW005	10.00		71	21.7	53	11.9	36	2.2	29	15	270		29.71	M	SP		29.65		
10	2253	12	CLR	10.00		70	21.1	53	11.8	37	2.8	30	8	310		29.75	29.69	AA		29.69		

Dynamically generated Thu Dec 17 11:22:08 EST 2015 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>

QUALITY CONTROLLED Local Climatological Data: IMPERIAL COUNTY AIRPORT

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
11	0011	12	BKN020	4.00	HZ	69	20.8	54	12.0	39	3.9	34	15	300		29.75		M	SP		29.69	
11	0031	12	FEW007 OV014	4.00	HZ	68	20.0	54	12.0	40	4.4	36	16	290	21	29.75		M	SP		29.69	
11	0053	12	BKN014	4.00		68	20.0	54	12.2	41	5.0	38	13	290		29.76			29.70	AA		29.70
11	0109	12	SCT018	8.00		68	20.0	54	12.0	40	4.4	36	9	280		29.77			29.71	AA		29.71
11	0153	12	FEW044	9.00		67	19.4	54	12.2	42	5.6	40	14	290		29.77			29.71	AA		29.72
11	0253	12	FEW055	10.00		64	17.8	52	11.2	41	5.0	43	9	270		29.78			29.72	AA		29.72
11	0353	12	BKN060	10.00		62	16.7	52	11.0	42	5.6	48	6	270		29.80			29.74	AA		29.74
11	0453	12	OV050	10.00		60	15.6	51	10.5	42	5.6	52	7	280		29.83			29.76	AA		29.77
11	0553	12	SCT042	10.00		63	17.2	52	11.2	42	5.6	46	7	270		29.86			29.80	AA		29.80
11	0653	12	CLR	9.00		71	21.7	56	12.5	39	3.9	31	10	340		29.88			29.82	AA		29.82
11	0753	12	CLR	10.00		74	23.3	53	11.4	29	-1.7	19	21	340	28	29.91			29.85	AA		29.85
11	0853	12	CLR	10.00		77	25.0	52	11.2	23	-5.0	13	20	360	30	29.92			29.86	AA		29.86
11	0953	12	CLR	10.00		77	25.0	52	11.2	23	-5.0	13	20	340	30	29.93			29.87	AA		29.87
11	1053	12	CLR	10.00		76	25.6	52	11.1	20	-11.1	8	21	330	31	29.92			29.86	AA		29.86
11	1153	12	FEW027	5.00	HZ	81	27.2	53	11.5	17	-8.3	9	30	340	38	29.92			29.86	AA		29.86
11	1253	12	CLR	10.00		82	27.8	53	11.4	13	-11.7	7	18	330		29.90			29.86	AA		29.86
11	1353	12	CLR	10.00		82	27.8	52	11.2	11	-14.4	5	16	350	25	29.90			29.84	AA		29.84
11	1453	12	CLR	10.00		83	28.3	52	11.2	6	-15.0	5	17	340		29.89			29.83	AA		29.83
11	1553	12	CLR	10.00		83	28.3	52	11.1	5	-15.0	5	17	340		29.89			29.83	AA		29.83
11	1653	12	CLR	10.00		82	27.8	53	11.9	18	-8.3	9	14	020		29.90			29.84	AA		29.84
11	1753	12	CLR	8.00		80	26.7	52	11.3	17	-7.2	12	8	350		29.92			29.86	AA		29.86
11	1853	12	CLR	10.00		76	24.4	51	10.5	19	-4.4	16	6	340		29.93			29.87	AA		29.87
11	1953	12	CLR	10.00		73	22.8	51	10.4	24	-3.3	19	6	330		29.95			29.88	AA		29.88
11	2053	12	CLR	10.00		71	21.7	50	10.2	26	-4.4	20	6	240		29.96			29.90	AA		29.90
11	2153	12	CLR	10.00		66	18.9	48	8.6	24	-6.7	18	7	240		29.96			29.90	AA		29.90
11	2253	12	CLR	10.00		64	17.8	46	7.5	20	-2.8	29	3	VR		29.97			29.91	AA		29.91
11	2353	12	CLR	10.00		59	15.0	45	7.2	27									29.91	AA		29.90

Dynamically generated Thu Dec 17 11:23:41 EST 2015 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>